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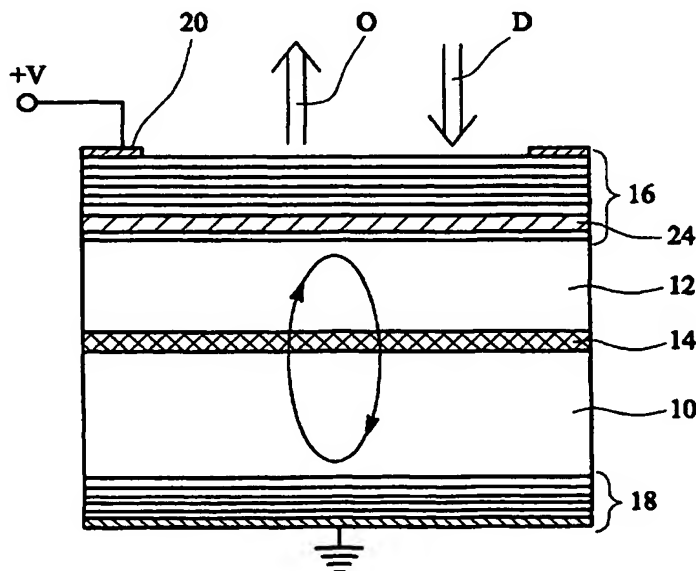
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[Continued on next page]

(54) Title: SEMICONDUCTOR OPTICAL DEVICES



(57) Abstract: A semiconductor optical device (e.g. a resonant cavity device in this form of an LED or a laser) comprises a single substrate arranged for emitting light (O) for incidence on a sample or other element and also responsive to light (D), e.g. of a different wavelength, received back from this sample or other element: the device further comprises means for monitoring a characteristic (e.g. its current-voltage characteristic) which varies in dependence upon the light (D) received back from the sample or other element.



— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

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20 January 2005

# INTERNATIONAL SEARCH REPORT

Int P	Application No 03/04558
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**A. CLASSIFICATION OF SUBJECT MATTER**  
 IPC 7 H01L31/173 H01L31/0232 G01N21/64 H01S5/026

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)  
 IPC 7 H01S H01L G01N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2001/046712 A1 (HANG ZHIJIANG ET AL) 29 November 2001 (2001-11-29) abstract; figures 15,16 paragraphs '0066!, '0069!	1-7, 16-24
X	US 5 533 041 A (MATSUDA MANABU ET AL) 2 July 1996 (1996-07-02) column 15, line 18 - column 16, line 30; figures 16-18	1-6
X	US 5 978 401 A (MORGAN ROBERT A) 2 November 1999 (1999-11-02) figure 2	1-8
X	WO 01/26102 A (NEW DIMENSION RES & INSTR INC) 12 April 2001 (2001-04-12) figure 2b	1-5
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☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

\* Special categories of cited documents:

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- \*E\* earlier document but published on or after the international filing date
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- \*O\* document referring to an oral disclosure, use, exhibition or other means
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- \*G\* document member of the same patent family

Date of the actual completion of the international search

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# INTERNATIONAL SEARCH REPORT

Inte Application No

PC1/GB 03/04558

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 319 182 A (HAMMOND JR CHARLES M ET AL) 7 June 1994 (1994-06-07) abstract; claim 1 -----	1-15
A	US 5 679 964 A (MATSUDA KENICHI ET AL) 21 October 1997 (1997-10-21) abstract -----	1-15
A	US 6 370 176 B1 (OKUMURA TOSHIYUKI) 9 April 2002 (2002-04-09) abstract -----	11,14,15
A	PATENT ABSTRACTS OF JAPAN vol. 0070, no. 17 (E-154), 22 January 1983 (1983-01-22) & JP 57 173984 A (TATEISHI DENKI KK), 26 October 1982 (1982-10-26) abstract -----	1-18

# INTERNATIONAL SEARCH REPORT

onal application No.  
rCT/GB 03/04558

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☒ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

**FURTHER INFORMATION CONTINUED FROM PCT/SA/ 210**

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-18

Integrated optical emitter/detector with monitoring means.  
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2. claims: 19-24

Device for the analysis or testing of a sample, the device comprising a single emitter and a single receptor.  
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# INTERNATIONAL SEARCH REPORT

Inteq Application No  
PCT/GB 03/04558

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